

STATE OF MAINE

10-144

DEPARTMENT OF HUMAN SERVICES  
DIVISION OF HEALTH ENGINEERING

CHAPTER 228

RULES RELATING TO FLUORIDATION  
OF PUBLIC WATER SYSTEMS

10 STATE HOUSE STATION  
AUGUSTA, MAINE 04333

EFFECTIVE DATE

These rules are effect March 21, 2001

10-144  
Chapter 228

Department of Human Services  
Bureau of Health  
Drinking Water Program

STATE OF MAINE  
  
RULES RELATING TO FLUORIDATION  
OF PUBLIC WATER SYSTEMS

SUMMARY STATEMENT

These rules contain requirements, which must be met by public water systems that adjust the fluoride ion concentration of their water.

BASIS STATEMENT

These regulations are promulgated to regulate the manner, methods, and necessary reporting to the state which must be followed when fluoride levels are adjusted by a public water system.

AUTHORITY

These relations are established under authority of 22 MRSA sections 2611 and 2651.

Non-Discrimination Notice

In accordance with Title VI of the Civil Rights Act of 1964, as amended by the Civil Rights Restoration Act of 1991 (42 U.S.C. 1981, 2000e et seq.) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), the Age Discrimination Act of 1975, as amended (42 U.S.C. 6101 et seq.), Title II of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.), and Title IX of the Education Amendments of 1972, the Maine Department of Human Services does not discriminate on the basis of sex, color, national origin, disability or age in admission or access to or treatment or employment in its programs and activities.

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## 1. GENERAL PROVISIONS

### 1.1 Application and Scope

- A. The provisions of these rules shall apply to all public water systems that adjust the fluoride ion concentration in their drinking water.

### 1.2 Constitutionality

- A. Should any section, paragraph, sentence, clause, or phrase of these rules be declared unconstitutional or invalid for any reason, such decision shall not affect the validity of the remaining portion of these rules.

## 2. DEFINITIONS

- A. DEPARTMENT: State of Maine Department of Human Services.
- B. FLUORIDATION: The addition of a chemical to increase the concentration of fluoride ion in drinking water to a predetermined optimum limit to reduce the incidence (number) of dental caries (tooth decay).
- C. MAXIMUM CONTAMINANT LEVEL: The maximum concentration of a contaminant allowed under the National Primary Drinking Water Regulations in water supplied for human consumption.
- D. NATURAL FLUORIDE LEVEL: The concentration of fluoride that is present in the water source from naturally occurring fluoride
- E. PUBLIC WATER SYSTEM: Is hereby incorporated by reference as defined in the Chapter 22 M.R.S.A § 2601 and 10-144 CMR 231 Section 2 in the State of Maine Rules Relating to Drinking Water.
- F. SECONDARY MAXIMUM CONTAMINANT LEVEL: The maximum recommended level of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of the public water system.
- G. THEORETICAL FLUORIDE DOSE: The calculated dose of fluoride ion added to a drinking water supply.
- H. THEORETICAL FLUORIDE CONCENTRATION: The calculated concentration of fluoride ion in a distribution system which includes the theoretical fluoride dose plus the natural fluoride level.

### 3. FLUORIDATION IMPLEMENTATION

#### 3.1 General

- A. No public water system shall add ~~any~~ fluoride to its water supply without having submitted an application to, and obtained written approval from the Department.

#### 3.2 Application for Approval

- A. Requests for approval of the addition of fluorides to a public water system shall be submitted by application to the Department. The following information shall be submitted to the Department:
  - 1. Complete plans and specifications of the proposed installation.
  - 2. Authorization: In those municipalities which have authorized the addition of fluoride to their water supply pursuant to 22 MRSA, section 2652, the municipal clerk shall inform the water system, in writing, of the municipality's authorization, within ten (10) days of the final tabulation. The water system shall inform the Department, in writing, within seven (7) days of the water system notice from the municipal clerk.

#### 3.3 Fluoridation Start-up

- A. A Public Water System authorized to fluoridate shall do so within nine (9) months after notification by the municipal clerk. Extensions will be granted upon written request and with the approval of the Department.

### 4. APPROVED CHEMICALS

- 4.1. Approved chemicals: Only chemicals approved by the Department shall be used for the fluoridation of public water systems. Any change in chemical usage shall occur only after notification and approval by the Department. Currently, the following chemicals are approved: Sodium Fluoride and Fluorosilicic Acid (Hydrofluorosilicic Acid). The department may approve other chemicals on a case by case basis. All chemicals must meet American Water Works Association (AWWA) and NSF International standards before use.

## 5. FLUORIDE CONTROL LEVELS

- 5.1 Optimum Level: The optimum level of fluoride for dental benefit is 1.2 mg/l in drinking water.
- 5.2 Optimum Range: The concentration of the fluoride ion in drinking water must be maintained in the optimum range of 1.0 to 2.0 mg/l (ppm).
- 5.3 Recommended Control Range: The recommended control range is plus (+) or minus (-) 0.2 mg/l (ppm) of the optimum level. This is the range that the operator should keep the fluoride levels within in order to retain a stabilized fluoride addition.
- 5.4 Secondary Maximum Contaminant Level: The secondary maximum contaminant level for fluoride is 2.0 mg/l (ppm).
- 5.5 Maximum Contaminant Level: The maximum contaminant level for fluoride is 4.0 mg/l (ppm).

## 6. FEED EQUIPMENT

- 6.1 Limits: The feed equipment shall be able to feed the optimum amount of fluoride over the entire range of expected flow and shall feed in proportion to flow in order to maintain the fluoride level in the recommended control range.
- 6.2 Accuracy: The accuracy of the feeders shall be within five (5) percent of the intended dose.
- 6.3. Solution Feeders
  - A. All solution-feed equipment must be provided with a vacuum breaker, antisiphon valve or other equivalent device at appropriate points to prevent siphonage of fluoride solution. Down/flow saturators shall not be permitted.
  - B. Fluoride solutions shall not be added to a point of negative pressure without a back/pressure valve on the injection line and an anti-siphon device on the chemical feed equipment.
  - C. When using an upflow saturator, the volume of make-up water used in preparing a solution shall be metered and a two (2) gallon per minute flow restrictor or its equivalent shall be installed prior to the vacuum breaker.

- D. When fluorosilicic acid (hydrofluosilicic acid) is used, a weight or volumetric measurement, accurate within  $\pm 5\%$  of the average daily reading, shall be provided for measuring the amount used per day. The storage container must be sealed and vented to the outside.
- E. Day tanks shall be provided where bulk storage of liquid chemical is provided.

#### 6.4. Dry Chemical Feeders

- A. Dry-chemical feeders of either the volumetric or gravimetric-type are acceptable.
- B. Dry chemical feeders must be completely enclosed to prevent dust accumulation.
- C. Sufficient water shall be supplied to the chemical feeder to dissolve all the fluoride compound. Backflow prevention shall be installed to prevent backsiphonage into the water supply.
- D. A vacuum breaker, antisiphon valve or its equivalent, must be provided to prevent the contents of the solution container from being drained or siphoned into the water being treated when the unit is shut down.
- E. Any connection between a wastewater inlet and the drain of a solution ~~pot~~ container shall be through an air gap or other approved backflow preventer, to avoid a cross-connection.

## 7. SAFETY

### 7.1 General

- A. All persons engaged in handling fluoride components must be provided with proper Personal Protective Equipment (PPE), in accordance with Occupational Safety and Health Administration (OSHA), Maine Department of Labor (DOL) and Centers for Disease Control and Prevention (CDC) standards.
- B. Dust collection apparatus or other ventilating equipment should be provided to minimize fluoride dust, but is not required for fluorosilicic acid.



- C. Stored fluoride chemicals must be isolated in such a way to prevent the mixing of the liquid chemicals. Liquid fluoride chemicals must be vented separately.
- D. All liquid chemicals must have secondary containment, not including injection lines and bulk fill lines.
- E. Material Safety Data Sheets (MSDS) and Overfeed Action Sheets for fluoride-must be posted adjacent to all fluoride rooms.
- F. Fluoride emergency handling practices and spill procedures should be included in all emergency plans. A spill-containment kit should be available to all water system personnel if needed.

## 8. MONITORING

### 8.1 Daily Testing

- A. For each day and from each fluoride application point that water is produced, a representative sample must be collected for each fluoride application point and must be analyzed daily for fluoride ion concentration by the water system operator. Testing for fluoride by the water supplier shall be by methods approved by the Department or as stated in Standard Methods for the Examination of Water and Wastewater.
- B. Automated Continuous Monitoring
  - 1. Automated continuous monitoring may be substituted for daily sampling upon approval by the Department. The following conditions must be met for approval:
    - a. Approval of instrumentation, calibration and monitoring procedures is required
    - b. Demonstration of the ability to maintain calibration of the continuous fluoride ion concentration analyzer within an acceptable range of deviation
    - c. Instrumentation providing for fluoride system shut-down and notification of water operator if fluoride concentration is outside of optimum range
    - d. Instrumentation providing for notification of water operator if there is a failure of the analyzer, analyzer signal or

telemetry or appropriate alarms in the event of a static signal

- e. Procedures for periodic testing of all alarms and monitoring equipment

## 8.2 Theoretical Calculations

- A. Daily or weekly theoretical fluoride doses must be calculated for each fluoride application point. If the weekly theoretical fluoride concentration(s) and/or the weekly average of the analytical values deviates, the operator must investigate and take corrective action. All results and comments must be included in the “remarks” section of the monthly reports.
- B. Theoretical Fluoride Dose Calculation guidance shall be provided by the Department.

## 8.3 Monthly Testing

- A. In addition to the above, samples of fluoridated water from the distribution system shall be submitted for examination by a laboratory certified to analyze fluoride at least once each month or more often as required by the Department.
- B. The monitoring frequency for fluoride is based on the population served by the system as follows:

Population Served	Minimum Number of Certified Samples Per Month
0 – 500	One
501 - 3300	Two
3301 – 10,000	Three
10,000 or Greater	Four

Samples shall be analyzed by a laboratory certified to perform the tests.

## 9. REPORTS

### 9.1 General

- A. Each water system adjusting the fluoride level must report monthly, to the Department using a format approved by the Department.

- B. The reports shall be submitted by the tenth day of the month following the period covered by the report and must include the following for each fluoride application point:
1. Volume of water treated per day, specifying whether in cubic feet or gallons.
  2. Weight or volume of fluoride compound added to the water per day.
  3. Results of daily sample analyses for fluoride ion concentration.
  4. Type of chemical used, the AFI, and chemical purity.
  5. Remarks pertaining to irregular feed rates throughout the month.
  6. The daily or weekly theoretical fluoride concentrations, which includes the natural fluoride level plus the theoretical dose.
  7. Results of certified fluoride lab sample(s), if the system is not using the State Health and Environmental Testing Lab (HETL).
  8. Continuous monitoring: daily minimum, daily maximum, and daily average readings during operation.

## 10. ENFORCEMENT

### 10.1 General

- A. The Division of Health Engineering shall represent the Department in carrying out the provisions of the above rules.
- B. All authorized representatives of the Department shall be permitted to inspect, examine, and test all water treatment plants, equipment, and facilities used for the addition of fluoride to a public water supply and to take such samples of water, and fluoride compounds as they may deem necessary to insure compliance with these requirements.
- C. If, after reviewing the monthly reports submitted by a public water system which fluoridates, the Department determines that the results of daily fluoride analyses is outside of the optimum range for a period of time greater than fourteen (14) consecutive days it shall contact the water system in question. The Department shall, at that time, request an explanation of why the optimum levels are not being maintained, and

plans for corrective action. If the water system is outside the optimum range again within one year, the Department may require public notification by the water system in accordance with Section 10.2 Public Notification Language.

- D. If the fluoride level exceeds the Maximum Contamination Level (4.0mg/), the water system must follow the procedures in section 10.2.
- E. The Water System shall notify the Department if it is known that fluoride concentrations will be below 1.0 mg/1 (ppm) for a period of time greater than fourteen (14) consecutive days. The Department shall require public notification by the water system in accordance with section 10.2.
- F. If the Department determines that it is in the best interest of the public, it may at its sole discretion, choose to perform public notification.

## 10.2 Public Notification

### A. MCL Violation

DO NOT DRINK WATER ORDER  
PUBLIC NOTIFICATION  
FLUORIDE MCL VIOLATION  
(STANDARDIZED LANGUAGE)

Dear User,

The U.S. Environmental Protection Agency requires that we send you this notice on the level of fluoride in your drinking water. The drinking water in your community had a fluoride concentration of ( ) milligrams per liter(mg/l) during the following dates:

Federal regulations require that fluoride not exceed levels of 4.0 mg/l in drinking water. This is an enforceable standard called a Maximum Contaminant Level (MCL), and it has been established to protect public health. Consumers are directed NOT to drink the water, make ice cubes, wash food, brush teeth or other activity requiring human consumption.

This must be done until further notice!

Questions regarding this notice should be directed to:( ) at ( ) or to the State of Maine Drinking Water Program at (207) 287-2070 TDD (207)-287-2070 during normal business hours.

B. Temporary Fluoride Suspension

PUBLIC NOTIFICATION  
TEMPORARY FLUORIDATION SUSPENSION

Dear User,

The fluoridation adjustment in your community drinking water in your community will be temporarily suspended due to: ( ).

Regulations require fluoride notification if fluoridation is below optimum range for a period of time greater than fourteen (14) days. The reason for the interruption of fluoridation is: ( ). Fluoridation is scheduled to be restored by the following date: ( ).

Those who wish to continue receiving the benefits of fluoride, without interruption, should contact their dentist or healthcare provider. Questions regarding this notice should be directed to: ( ) at ( ) or to the State of Maine Drinking Water Program at (207) 287-2070 or TDD (207) 287-2070 during normal business hours.

C. Failure to Fluoridate

PUBLIC NOTIFICATION  
FAILURE TO FLUORIDATE

Dear User,

The fluoridation adjustment on your drinking water in your community was temporarily suspended due to: ( ).

Regulations require fluoride notification if fluoridation fluoride is below optimum range for a period of time greater than fourteen (14) days. Optimal fluoride levels were not maintained during the following dates: ( ).

The reason for the interruption of fluoridation was: ( ). Fluoridation is scheduled to be restored by the following date: ( ).

Those who wish to continue receiving the benefits of fluoride, without further interruption, should contact their dentist or healthcare provider. Questions regarding this notice should be directed to: ( ) or to the State of Maine Drinking Water Program at (207) 287-2070 or TDD: (207) 287-2070 during normal business hours.

EFFECTIVE DATE:

November 15, 1979

AMENDED:

October 22, 1997 (EMERGENCY)

EFFECTIVE DATE (ELECTRONIC CONVERSION):

May 5, 1996.

AMENDED:

March 21, 2001